AMSAT News Service Weekly Bulletins
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SB SAT @ AMSAT $ANS-089.01
ANYONE FOR IPS?

HR AMSAT NEWS SERVICE BULLETIN 089.01 FROM AMSAT HQ
SILVER SPRING, MD, MARCH 30, 1997
TO ALL RADIO AMATEURS BT
BID: $ANS-089.01

The Phase 3D satellite under construction, like its predecessors P3A, Oscar-10 and Oscar-13, has as its "brains", a computer system based on the RCA COSMAC 1802 microprocessor. The computer is running an operating system

called "IPS", and loaded into that environment is the flight software that does all the spacecraft command and control, housekeeping chores, battery charge control, navigation, transponder switching, beacon data generation and so on. But how many people know anything about IPS?
Not many nowadays. Well, here's a unique opportunity to discover all about it. IPS (Interpreter for Process Structures) was devised by Karl Meinzer DJ4ZC at a time when 1802, 6502, 6800 and 8080/Z80 processors were state of the art; around 1976-1979. At that time there just wasn't an easy-to-use, robust, engineering-oriented, multitasking and, above all, a portable operating system for cheap computers based on these MPUs and their tiny (boldly described as "massive") 16 Kbyte memories. Computers at that time meant the Atari 800, North Star Horizon etc.

An IPS Manual was written by Karl Meinzer in 1978, but was never published in any substantial form. A hand corrected draft printout was circulated to

a few interested AMSAT engineers who then reproduced it ad hoc, minus several chunks, via ever worsening photocopies. But the paper original was

long lost. Happily, in 1996 the manual was discovered to have survived on an Atari 800XL computer cassette tapes, and moreover in the mid '80s had been transferred to floppy disc by Robin Gape G8DQX, a prominent IPS contributor at that time. Thus, after a gap of nearly two decades, it has become practical to publish the document properly, and that's what James Miller has done. IPS is a threaded language not unlike Forth, a brilliant piece of software engineering, as relevant today as it ever was. From Karl's introduction Miller quotes:

> "This book is organized into three chapters of increasing sophistication. Chapter I presents an introduction to the language; the material presented there will enable you to accomplish all "regular" programming tasks. Chapter II introduces the assemblers for the COSMAC 1801/1802, the 8080, the 6800 and the 6502 allowing low-level extensions and interfaces.
>
> Finally, Chapter III describes and documents the inner workings of IPS; this material will be useful if you wish to extend or change IPS itself."

IPS - High Level Programming of Small Systems, by Karl Meinzer, is a 120 page A5 book in fold-flat ring-binder format, edited, typeset and re-published at James Miller's own expense to recognize the author's 30 years unparalleled contributions to the amateur satellite program.

This book is written in English. Net proceeds from the sale of this book
will be donated to the P3D Satellite Project.

Some sample pages (GIFs) are available at:
http://www.jrmiller.demon.co.uk/IPS/

There will be only one print run, and the size of this run will directly
determine the price. In order to tell the printer how many books to make,
Miller needs to know how many people are interested in how many copies.
The book will be published even if this is NIL! On the other hand, if the
print run is several hundred, a substantial donation will be poured into
the AMSAT P3D coffers, at a time when more cash is desperately needed.
If you are interested, please complete the 3-line form below, and e-mail it
back to James Miller, g3ruh@amsat.org
Return of this information places no obligation upon you to purchase
anything. IPS - High Level Programming of Small Systems" by Karl Meinzer

  ---

  Name:

  De-bounced e-mail address:

  I would be interested in obtaining _____ copies

PLEASE DO NOT BOMB JAMES MILLER WITH QUERIES ABOUT PRICE, DELIVERY OR
ORDERING.
Anything important will be e-mailed directly to you. The delivery
timescale is about 6 weeks from now. The price will be APPROXIMATELY
GBP 19.00 plus postage.

[ANS thanks James Miller, G3RUH, for this information.]

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SB SAT @ AMSAT $ANS-089.02
NEW AO-10 KEPS

HR AMSAT NEWS SERVICE BULLETIN 089.02 FROM AMSAT HQ
SILVER SPRING, MD, MARCH 30, 1997
TO ALL RADIO AMATEURS BT
BID: $ANS-089.02

Space Command has published a new set of Keps for AO-10:
AO-10
1 14129U 83058B   97086.09215926 -.00000160 00000-0 10000-3 0 4644
2 14129 25.6368 156.5618 6073912 102.9697 328.9901 2.05881543 75687

These compare favorably with the estimated set (epoch 97054.5) with the
exception of about a 0.6 degree shift in orbital plane.

[ANS thanks Ken Ernandes, N2WWD, for his great work in supplying
AO-10 keps.]

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SB SAT @ AMSAT $ANS-089.03
ARRL/ TAPR DIGITAL CONFERENCE

HR AMSAT NEWS SERVICE BULLETIN 089.03 FROM AMSAT HQ
SILVER SPRING, MD, MARCH 30, 1997
TO ALL RADIO AMATEURS BT
BID: $ANS-089.03

It's that time again! Time to make your calendar and think about what to
publish for the upcoming 16th Annual ARRL and TAPR Digital Communications
Conference. 1997 marks the second year in which the ARRL Digital
Communications Conference and TAPR Annual General Meeting have joined

into one conference!

The ARRL and TAPR Digital Communications Conference is an international forum for radio amateurs in digital communications, networking, and related

technologies to meet, publish their work, and present new ideas and techniques for discussion. Presenters and attendees will have the opportunity to exchange ideas and learn about recent hardware and software advances, theories, experimental results, and practical applications. The Digital Communications Conference is not just for the digital expert, but for digitally-orientated amateurs of all levels of experience.

The 1997 ARRL and TAPR Digital Communications Conference will be held October 10-12, 1997 in Baltimore, Maryland. This year's conference location is just minutes away from the BWI (Baltimore/Washington International) Airport.

Not only is the Digital Communications Conference technically stimulating, it is a weekend of fun for all who have more than a casual interest in any of the ham digital communications modes. This includes APRS operators, networkers, software writers, modem designers, and digital satellite communications enthusiasts. The ARRL and TAPR Digital Communications Conference is for all levels of digital operators -- a must conference to attend to get active on a national level. Now, more than ever, amateur radio needs this great meeting of the minds, since it is important that we demonstrate a continued need for the frequency allocations we now have by pushing forward and documenting our achievements. The ARRL and TAPR Digital

Communications Conference is one of the few ways to record our accomplishments and challenge each other to do more.

The 1997 ARRL and TAPR Digital Communications Conference will be co-hosted by AMRAD (Amateur Radio Research and Development Corporation). The Amateur Radio Research and Development Corporation (AMRAD) is a worldwide club of amateur radio and computer experimenters whose purpose is to develop skills

and knowledge in radio and electronic technology, advocate design of experimental equipment and techniques, promote basic and applied research, organize technical forums and symposiums, collect and disseminate technical

information, and provide experimental repeaters.
http://www.amrad.org

Full information on the conference and hotel information can be obtained by contacting Tucson Amateur Packet Radio, 8987-309 E. Tanque Verde Road #337,

Tucson, AZ 85749-9399. Phone: (817) 383-0000. Fax: (817) 566-2544.
Internet: tapr@tapr.org Web: www.tapr.org/dcc

[ANS thanks the ARRL, TAPR, and AMRAD for this news.]

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SB SAT @ AMSAT $ANS-089.04
RS-16 TLM NEEDED

HR AMSAT NEWS SERVICE BULLETIN 089.04 FROM AMSAT HQ
SILVER SPRING, MD, MARCH 30, 1997
TO ALL RADIO AMATEURS BT
BID: $ANS-089.04

Stan Cameron, VE6AMB, received a request from Andy, RK3KPK, at command station for RS satellites, requesting copies of RS16 telemetry

on passes over NW Canada. Send the TLM reports to the following packet address RK3KPK@RA3KP.MSK.RUS.EU

[ANS thanks Stan Cameron, VE6AMB, for this news item.]

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SB SAT @ AMSAT $ANS-089.05
OPEN HOUSE AT GOLDSTONE

HR AMSAT NEWS SERVICE BULLETIN 089.05 FROM AMSAT HQ
SILVER SPRING, MD, MARCH 30, 1997
TO ALL RADIO AMATEURS BT
BID: $ANS-089.05

On Saturday, April 19, 1997, JPL will partner with AlliedSignal Corporation to host an Open House at the Goldstone Deep Space Communications Complex. No sign up, or registration is required. This event is open to the public. At the Goldstone Complex Guard Gate, visitors will be directed to parking areas, and transportation to antenna sites will be by bus.

First stop will be at the Mars site to see the 70-meter antenna and view the mission operations room. Safety regulations do not permit public access to the antenna pedestal or dish.

Next, the bus will drive visitors to the Apollo site. Here there will be public access to the pedestal of one of the new 34-meter Beam Wave Guide antennas. JPL planetary missions will also have exhibits in this area.

The bus then returns guests to the main Echo site for other displays, exhibits, demonstrations, and a video screening. The cafeteria will be serving light meals and drinks, and souvenirs will be available for purchase.

During the Open House a special event will be staged to dedicate the three new 34-meter antennas at the Apollo site. Representatives from the contracting companies who erected the antennas will be joined by members of JPL's management in a short ceremony of official dedication to be held at 1:00 p.m..

For updates, see the DSN OUTREACH web site at
http://deepspace.jpl.nasa.gov/dsn/dsn_outreach.html

A map giving directions to the Goldstone Deep Space Communications Complex is available as a link from that site, or directly at
http://deepspace.jpl.nasa.gov/buttons/map_gdscc.GIF

[ANS thanks Eric Archer, N6CV for this update.]

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SB SAT @ AMSAT $ANS-089.06
P3D LATEST

HR AMSAT NEWS SERVICE BULLETIN 089.06 FROM AMSAT HQ
SILVER SPRING, MD, MARCH 30, 1997
TO ALL RADIO AMATEURS BT
BID: $ANS-089.06

Dick Jansson, who has been in Europe for the past two weeks reports a *second-in-a-row* successful load test of the Phase 3D SBS, the

structure which houses the satellite as it rides the launch vehicle.
This test confirmed the lateral stiffness of the SBS. This means, Dick
commented, that the P3D-SBS has met all of its *original* load carrying
requirements for a passenger payload.

[ANS thanks Dick Jansson WD4FAB for this good news]

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SB SAT @ AMSAT $ANS-089.07
WEEKLY SATELLITE REPORT PT 1

HR AMSAT NEWS SERVICE BULLETIN 089.07 FROM AMSAT HQ
SILVER SPRING, MD, MARCH 30, 1997
TO ALL RADIO AMATEURS BT
BID: $ANS-089.07

MIR:
(New frequencies implemented 1 January 1997:
Uplink 145.2 MHz FM Downlink 145.8 MHz FM)
Note, the above split is used for both packet and voice operation.

SAFEX, MIR 70cm Repeater
(Uplink 435.750 MHz FM, Downlink 437.950 MHz FM,
Subaudible tone 141.3 Hz)
The repeater operational and active..

RS-10:
(Uplink 145.865-145.905 MHz CW/SSB, Downlink 29.36-29.4 MHz CW/SSB)
RS-10 is operational.

RS-12:
(Uplink 21.21-21.25 MHz CW/SSB, Downlink 29.41-29.45 MHz or
145.91-145.95 Mhz CW/SSB)
The sat continues to provide excellent downlink signals in both T-
and K-mode.
[ANS thanks Dick Montgomery, N3DV, for this update.]

RS-15
(Uplink 145.858-145.898 MHz CW/SSB, Downlink 29.354-29.394 MHz CW/SSB)
Be aware that RS-15 has battery charging problems. When the satellite is
in the dark it has low output power..
[ANS thanks Geoff Perry for this report.]
(Hint: If SSB doesn't work for you, try CW. CW is very easy
to hear on the downlink!)

RS-16
RS-16's 70 cm, 435.504 Mhz beacon on RS-16 operational.
The 10 meter beacon is not active at this time. Transponder is not
operational.
[ANS thanks WT0N for this report.]
The March 29th 1520Z pass yielded the following results. The 435.504 Mhz
beacon on. S9+20 here in Roanoke, Va. The following data was being send
down via the beacon; RS-16 P167,0218,n45,m0,l0,k7,j5,i7,h49,g0,f164,e8,
d8,c9,b9,a8.
[ANS thanks Bernie Hall, WY4D, for this report.]

FO-20
(Uplink 145.9-146.0 MHz CW/LSB, Downlink 435.8-435.9
MHz CW/USB)
Operating normally. Strong downlink signal.

KO-23
(Uplink 145.85, 145.9 MHz FM, Downlink 435.175 MHz FM,

9600 Baud FSK.)
KO-23 operating normally.
.
KO-25:
(Uplink 145.980 MHz FM, Downlink 436.5 MHz FM,
9600 Baud FSK.)
KO-25 operating normally.
[ANS thanks Jim Weisenberger, AA7KC, for his reports on
KO-25 and KO-23.]

AO-27:
(Uplink 145.85 MHz FM, Downlink 436.8 MHz FM)
Operating normally and lots of activity heard over
North America and Europe.
As of March 30, 1997

  Tepr 4 = 32 counts   16 Minutes
  Tepr 5 = 66 counts   18 Minutes

AO-27 Will turn on Every pass 16 Minutes after entering the sun and will
stay on for 18 minutes. This corrects the early shut off that has been
going on for the passed few weeks.

Northern Stations will see the satellite turn on after AOS for the next
week or so. This is due to the TEPR states being calculated for a while
from now instead of Today. So the schedule will be drifting into a better
state. This gives us a longing time before the schedule gets out of whack.

Thanks goes out to the Alternate Control Station KM4NZ/N1XAU for the use
of their station via the Internet for Controlling the satellite. With
new software that lets me control the satellite at remote sights, I hope
to be able to keep the TEPR Schedule more up to date.
[ANS thanks Michael Wyrick, N4USI, AO-27 Control-op, and Miguel A.
Menendez, EA1BCU, for this update.]

FO-29
Voice/CW
(Uplink 145.9-146.0 MHz CW/LSB, Downlink 435.8-435.9 MHz CW/USB)
Digital
(Uplink 145.85, 145.87, 145.910 MHz FM, Downlink 435.910 MHz FM 9600 baud
BPSK)
The latest FO-29 Schedule can be found at.
http://www.kt.rim.or.jp/~jr1nvu/eindex.html
03/28/97 10:45 utc Digi-Talker
04/01/97 00:30 utc JD 9600 bps FSK

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SB SAT @ AMSAT $ANS-089.08
WEEKLY SATELLITE REPORT PT 2

HR AMSAT NEWS SERVICE BULLETIN 089.08 FROM AMSAT HQ
SILVER SPRING, MD, MARCH 30, 1997
TO ALL RADIO AMATEURS BT
BID: $ANS-089.08

AO-10:
(Uplink 435.030-435.18 MHz CW/LSB, Downlink 145.975-145.825 MHz
CW/USB)
AO-10 is operational.
AO-10
1 14129U 83058B   97086.09215926 -.00000160 00000-0 10000-3 0 4644
2 14129 25.6368 156.5618 6073912 102.9697 328.9901 2.05881543 75687
[ANS thanks Ken Ernandes, N2WWD, for getting these keps..]

OSCAR-11
(Downlink 145.825 MHz. FM, 1200 Baud PSK. Beacon 2401.500 MHz..)
Good signals have also been received on 435 MHz., Saturday 15 March,
14:00 pass, when the satellite was being commanded by ground control.
[ANS thanks Clive Wallis, G3CWV, for this information.]

AMSAT-OSCAR-16 (PACSAT)
(Uplink 145.9, 145.92, 145.94, 145.86 MHz FM, Downlink 437.0513 MHz SSB,
1200 Baud PSK. Beacon 2401.1428 Mhz.)
(PACSAT-AO-16)
Traffic heard this weekend in PACSAT's orbits over Europe include,
EB8AUB\D, G1OCN, DL3SDW, F1JEK\D, EA1BCU\D, EI6EH\D ,
GM4ULS, and IW6MZC.

<Telemetry ON-LINE>
uptime is 923/06:52:53. Time is Sat Mar 29 12:16:13 1997   PACSAT
Bat 1 V=1.343 V Bat 2 V=1.360 V Bat 3 V=1.391 V Bat 4 V=1.333 V
Bat 5 V=1.327 V Bat 6 V=1.423 V Bat 7 V=1.362 V Bat 8 V=1.359 V
RC PSK TX Out   0.650 W
Total Array C= 0.323 Bat Ch Cur=-0.020 Ifb= 0.044 I+10V= 0.330
TX:010C BCR:7D PWRC:5AE BT:3C WC:25 EDAC:F3

Graphic information about Telemetry values can be found at:
http://www.arrakis.es/~ea1bcu/ao16.htm
[ANS thanks Miguel A. Menendez, EA1BCU, for this report.]

PACSAT (AO-16)
Russ Platt WJ9F, AO-16 Command Team , reports the digipeater on AO-16 has
been on for the last couple of months. In regards to the 2.4 GHz
transmitter, it does continue to work although WJ9F has not been leaving
it on for an entire orbit due to its high current load on the 10 v bus.
The battery charging scheme on the micros is managed during sunlight
by adjusting the RCPSK transmitter power up or down to charge and
not overcharge the batteries since we have no way to turn the solar
cells off. The S-band transmitter does not have the ability to vary
its output so it is a high current draw throughout the orbit. In the
past during Experimenters Days when we have turned on the S-Band
transmitter I had to scale back the output of the RCPSK transmitter
to levels that were difficult to receive and even with these low levels
the onboard software will still turn off the S-band TX if the Battery
voltage drops too low, which it did. I guess that's why we called them
Experimenter's Days! In the future I do plan to continue to turn on the
S-band TX as power allows. I hope this answers your questions.
[ANS thanks Russ Platt WJ9F, AO-16 Command Team for this report.]

DO-17(DOVE)
(Downlink 145.825 MHz FM, 1200 Baud AFSK.
Beacon 2401.220 MHz.)
DOVE is transmitting on 2M and on S-band 2401.220 MHz.
The command team is keeping the S-band transmitter on as a
test signal for those working on getting S receive equipment going.
The S transmitter is running about .8W to a whip that sticks out the top of
the satellite near one edge. In the northern hemisphere the whip is
pointed away from the earth, it's toward the earth in the southern
hemisphere. It is quite loud with a typical satellite S-band receive
setup, but in the northern hemisphere it will fade as much as 20 dB with
rotation of the satellite. Doppler of course is large, approximately
100 KHz during a pass.
[ANS thanks Jim white, WD0E, DO-17 Command Team, for this news.]

WEBERSAT (WO-18)
(Downlink 437.104 MHz SSB, 1200 Baud PSK AX.25.)
Webersat (WO-18) is currently in MBL mode after last weeks system

crash. The satellite appears to be in good condition broadcasting
MBL telemetry.

BCRi316.43mA bplt 1.340C TxPw 0.231W 5 V 5.742V 8.5V10.008V
10V 14.036V
[ANS thanks Tommy Davis, IK3WVJ, for this report.]

LUSAT-OSCAR-19
(Uplink 145.84, 145.86, 145.88, 145.9 MHz FM, Downlink 437.1528 MHz SSB, 1
200 Baud PSK AX.25.)
(LUSAT-LO-19)
Note:
To establish position with respect to the time, add 6 minutes to
compensate for the lag of the clock in the satellite.

<Telemetry ON-LINE>
uptime is 647/21:10:12. Time is Sat Mar 29 11:15:22 1997   LUSAT
Bat 1 V=1.383 V Bat 2 V=1.375 V Bat 3 V=1.384 V Bat 4 V=1.377 V
Bat 5 V=1.390 V Bat 6 V=1.398 V Bat 7 V=1.383 V Bat 8 V=1.371 V
RC PSK TX Out   0.986 W
Total Array C= 0.276 Bat Ch Cur= 0.032 Ifb= 0.032 I+10V= 0.207
TX:01A BCR:7F PWRC:36E BT:3C WC: 0

Graphic information about Telemetry values can be found at:
http://www.arrakis.es/~ea1bcu/lo19.htm
[ANS thanks Miguel A. Menendez, EA1BCU, for this report.]

IO-26 (ITAMSAT):
(Uplink 145.875, 145.9, 145.925, 145.95MHz FM, Downlink 435.822 MHz SSB,
1200 Baud PSK.)
IO-26 controllers report that the spacecraft is now in IHT mode. The new
ROBOT software is under currently undergoing tests. The beacon reports
that the digipeater is OFF and that the ROBOT is undergoing tests.
Controllers ask that groundstations please do not transmit on any of
the satellite's uplink frequencies for the time being.
[ANS thanks Daniele Piercarlo, IK2XRO, ITMSAT Command Station for this
report.]

[Please send your Satellite or News reports to ANS Editor B.J. Arts, WT0N,
via e-mail, at bjarts@uslink.net or to wt0n@amsat.org]

/EX

B.J. Arts
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